

CLAIMS

1. A semiconductor device comprising:

a first comparator which has two input nodes having opposite polarity to each other and receives a reference voltage and a power supply voltage at their inputs to compare the respective voltage values to output a signal indicating a comparison result;

a first resistor element which connects the one side input node and the other side input node of the first comparator;

a capacitance element one end of which is connected to a power supply terminal which applies said power supply voltage and the other end of which is connected to the one side input node of the comparator; and

wherein the first comparator activates the output signal indicating the comparison result when the voltage difference between the reference voltage and the power supply voltage varies.

2. A semiconductor device as defined in claim 1, wherein:

the first comparator is a hysteresis comparator which activates the output signal indicating the comparison result when the voltage difference between the reference voltage and the power supply voltage becomes larger than a predetermined hysteresis width.

3. A semiconductor device as defined in claim 1, wherein further comprising:

a second and a third resistor elements connected in series between the power supply terminal and the ground terminal to divide the power supply voltage;

a second comparator having two input nodes and receives the power supply voltage divided by the second and the third resistor elements and the reference voltage at its inputs to compare those; and

a logic OR circuit which takes a logic OR operation of the output signal of the first comparator and the output signal of the second comparator.

4. A semiconductor device as defined in any of claims 1 to 3, wherein further comprising:

a reset portion which receives the output signals of the first comparator or the logic OR circuit at their inputs, and stops the operation of the system including the semiconductor device when the output signal of the first comparator or the output signal of the second comparator is activated.

5. A semiconductor device as defined in any of claims 1 to 3, wherein further comprising:

a switching part which switches the value of the power

supply voltage which is inputted to either of the input nodes of the first comparator to an arbitrary value.

6. A semiconductor device as defined in claim 5, wherein further comprising:

a control section which operates the switching part at turning on the power of the semiconductor device.

7. A semiconductor device comprising:

a first and a second comparators each of which has two input nodes having opposite polarity to each other and receives a reference voltage and a power supply voltage at their inputs to compare the respective voltage values to output a signal indicating a comparison result;

a first and a second resistor elements each of which connects the one side input node and the other side input node of the first and the second comparators, respectively;

a first and a second capacitance elements, one end of which is both connected to a power supply terminal which applies said power supply voltage, and the other end of which is connected to the one side input node of the first and the second comparator, respectively;

a logic OR circuit which takes a logic OR operation of the output signal of the first comparator and the output signal of the second comparator; and

wherein the first and the second comparators respectively activate the output signal indicating the comparison results when the voltage difference between the reference voltage and the power supply voltage varies, and the polarity of the input node which receives the power supply voltage in the first comparator and the polarity of the input node which receives the power supply voltage in the second comparator are opposite to each other.

8. A semiconductor device as defined in claim 7, wherein:

the first comparator and the second comparator are hysteresis comparators which activates the output signal indicating the comparison result when the voltage difference between the reference voltage and the power supply voltage is larger than a predetermined hysteresis width.

9. A semiconductor device as defined in claim 7, wherein further comprising:

a third and a fourth resistor elements connected in series between the power supply terminal and the ground terminal to divide the power supply voltage; and

a third comparator which has two input nodes and compares the power supply voltage which is divided by a third and a fourth resistor elements and the reference voltage to output a signal indicating the comparison result to the logic OR circuit.

10. A semiconductor device as defined in any of claims 7 to 9, wherein:

there is further provided a reset part which receives the output signal of the logic OR circuit at its input and stops the operation of a system including the semiconductor device when the output signal of the first comparator, the second comparator, or the third comparator is activated.

11. A semiconductor device as defined in any of claims 7 to 9, wherein further comprising:

a switching part which switches the value of the power supply voltage which is inputted to either of the input nodes of the first and the second comparators to an arbitrary value.

12. A semiconductor device as defined in claim 11 wherein further comprising:

a control section which operates the switching part at turning on the power of the semiconductor device.